Manuel Jorge M Marques

Curriculum Vitae

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b. April 30th, 1989
Last updated: 12th May 2015

"Live this day as if it will be your last." (Og Mandino)

Education

October 2012 to present day — **PhD in Physics**, *School of Physical Sciences, University of Kent*, Canterbury, United Kingdom.
Spectral-domain Optical Coherence Tomography
(PhD programme supported by a University Scholarship provided by the University of Kent).

September 2007 to September 2012 — **MSc in Physical Engineering**, *Faculdade de Ciências da Universidade do Porto*, Porto, Portugal.
Integrated Masters Programme (BSc+MSc).
Level 16.8 in a numerical scale of 20.

September 2004 to June 2007 — **High School diploma**, *Escola Secundária Filipa de Vilhena*, Porto, Portugal.
Sciences and Technologies (*Agrupamento 1)*
Level 18.6 in a numerical scale of 20.

Master Thesis

Title — *Experiments in Spectrometer-Based, Fourier-Domain Optical Coherence Tomography*

Viva-voce examination — October 15th, 2012 (Porto, Portugal). Level 19 in a numerical scale of 20.

Supervisors — Dr. Carla C. Rosa, Physics and Astronomy Department, Faculdade de Ciências da Universidade do Porto, Portugal, and Prof. Adrian Gh. Podoleanu, Applied Optics Group, School of Physical Sciences, University of Kent, United Kingdom

Keywords — Applied Optics, White Light Interferometry, Optical Coherence Tomography, Low-coherence Imaging, Fourier-domain OCT.

Additional education

February 2012 to March 2012 — Attended the PH800 module, *Biomedical Optics*, as part of graduate studies offered by the School of Physical Sciences at the University of Kent (Canterbury, UK). The main focus of the module was Optical Coherence Tomography, its variants and techniques.

October 2008 — Attended a course on basic command line Linux, provided by GlobalTEK (Porto, Portugal); (level 17 in a numerical scale of 20)

August 2007 — Participant on the *Universidade Itinerante do Mar 2007* course, where had training aboard the *Creoula* navy vessel (level 18 in a numerical scale of 20);

Work Experience

April 2015 to October 2015 — **Research Assistant in Photonics/Optical Coherence Tomography**, *School of Physical Sciences, University of Kent*, Canterbury, Kent, United Kingdom.
Researcher in the project titled "*Combined time domain and spectral domain coherence gating for imaging and biosensing*", funded by the European Research Council (ERC), "Ideas" Specific programme, Advanced, the 7th framework, COGATIMABIO.

October 2012 to April 2015 — **Graduate Teaching Assistant**, *School of Physical Sciences, University of Kent*, Canterbury, Kent, United Kingdom.
Performing lab demonstrations and marking as part of the Graduate Teaching Assistant Studentship programme.

September 2014 — **Project Instructor**, *Physics and Astronomy Department, Faculdade de Ciencias da Universidade do Porto*, Porto, Portugal.
Tutoring of high school students in a Physics Summer School (Escola de Verão de Física 2014) project on robotics and control systems (programming PID controllers in LEGO Mindstorms systems using LabVIEW). Also supervising the *on-line* registration and feedback process.

September 2013 — **Project Instructor**, *Physics and Astronomy Department, Faculdade de Ciencias da Universidade do Porto*, Porto, Portugal.
Tutoring of high school students in a Physics Summer School (Escola de Verão de Física 2013) project on robotics and control systems (programming PID controllers in LEGO Mindstorms systems using LabVIEW). Also supervising the *on-line* registration and feedback process.

October 2009 to October 2012 — **Researcher**, *INESC Porto, Optoelectronics and Electronic Systems Unit*, Porto, Portugal.
Researching in the area of White Light Interferometry and Optical Coherence Tomography (Applied Optics).

September 2012 — **Project Instuctor**, *Physics and Astronomy Department, Faculdade de Ciências da Universidade do Porto*, Porto, Portugal.
Tutoring of high school students in a Physics Summer School (Escola de Verão de Física 2012) project on robotics and control systems (programming PID controllers in LEGO Mindstorms systems using LabVIEW).

February 2012 to August 2012 — **Visiting MSc exchange (Erasmus) Student**, *Applied Optics Group, School of Physical Sciences, University of Kent*, Canterbury, Kent, United Kingdom.
Researching in the area of White Light Interferometry and Optical Coherence Tomography (Applied Optics) as part of my Master's degree in Physical Engineering, supported by the Erasmus Placement programme.

September 2011 — **Project Instructor**, *Physics and Astronomy Department, Faculdade de Ciências da Universidade do Porto*, Porto, Portugal.
Tutoring high school students in a Physics Summer School (Escola de Verão de Física 2011) project on robotics and control systems (programming PID controllers in LEGO Mindstorms systems using LabVIEW).

September 2010 — **Project Instructor**, *Physics and Astronomy Department, Faculdade de Ciências da Universidade do Porto*, Porto, Portugal.
Tutoring high school students in a Physics Summer School (Escola de Verão de Física 2010) project on robotics and control systems (programming PID controllers in LEGO Mindstorms systems using LabVIEW).

July 2009 to June 2010 — **Translator**, *Calouste Gulbenkian Foundation, Project "Casa das Ciências"* , Porto, Portugal.
Translating educational/formative texts from English/French to Portuguese, so that they could be distributed among high school teachers.

March 2009 to June 2009 — **Help-desk support operator**, *Applied Mathematics Department, Faculdade de Ciências da Universidade do Porto*, Porto, Portugal.
Providing support on the usage of the *R* software package for students taking a course on Biostatistics. (invited to take the position by my former Statistics professor, Prof. Pedro Lago)

February 2008 to January 2009 — **Help-desk support operator**, *Computer Centre, Faculdade de Ciências da Universidade do Porto*, Porto, Portugal.
Providing IT support to university students within the computer labs; also responsible for the maintenance of the university-owned computers and printers.

Additional positions (volunteering work)

June 2014 to present day — President of the University of Kent OSA Student Chapter (`https://www.facebook.com/pages/OSA-student-Chapter-at-University-of-Kent/347640935258294`)

November 2013 to June 2014 — Vice-president of the University of Kent OSA Student Chapter (`https://www.facebook.com/pages/OSA-student-Chapter-at-University-of-Kent/347640935258294`)

June 2013 to June 2014 — Treasurer of the Portuguese Association of Researchers and Students in the United Kingdom - *PARSUK* (`http://www.parsuk.pt/`)

July 2012 to November 2013 — Treasurer and web-designer of the University of Porto SPIE Student Chapter (`http://upspiechapter.inescporto.pt/`)

February 2009 to January 2012 — Member of the administration and web-designer of the Portuguese Association of Physics Students - *Physis* (`http://physis.org.pt/`)

Teaching and outreach experience

April 23rd, 2015 — Joint invited talk (with Dr Adrian Bradu) titled "*Seeing the Unseen: A talk about novel biomedical imaging techniques*" for the public (IOP / CSES lecture) at Chelmsford, Essex, United Kingdom.

October 2014 to April 2015 — Lab demonstrating and report marking for the School of Physical Sciences' PS370 module, *"Skills for Physicists"* for the academic year 2014-15.

March 14th, 2015 — Volunteer and part-organiser for the "*Light Up Your Life - Day of Discovery*" community outreach event at The Beaney House of Art of Knowledge (Canterbury).

December 9th, 2014 — Invited talk (repeat from the one in February 2014) titled "*Optical Coherence Tomography: from a Michelson interferometer to 3-D biomedical imaging (and beyond!)*" for a Physics undergraduate audience (Physics students' society - Physoc - at the University of Kent).

October 4th, 2014 — Student Guide and Physics Lab Demonstrator (School of Physical Sciences) at the University of Kent Open Days.

July 18th, 2014 — Presented poster showcasing current research at an Institute of Physics Update session (for Physics teachers), which took place in the School of Physical Sciences, University of Kent.

July 12th, 2014 — Student Guide (School of Physical Sciences) at the University of Kent Open Days.

February 18th, 2014 — Invited talk titled "*Optical Coherence Tomography: from a Michelson interferometer to 3-D biomedical imaging (and beyond!)*" for a Physics undergraduate audience (Physics students' society - Physoc - at the University of Kent).

October 2013 to April 2014 — Lab demonstrating and report marking for the School of Physical Sciences' PS370 module, *"Skills for Physicists"* for the academic year 2013-14.

October 2012 to April 2013 — Lab demonstrating and report marking for the School of Physical Sciences' PS370 module, *"Skills for Physicists"* for the academic year 2012-13.

Publications

Manuel J. Marques, Adrian Bradu, and Adrian G. Podoleanu. Optical Coherence Tomography and Scanning Laser Ophthalmoscopy: approaches to dual-channel retinal tissue imaging. In *Frontiers in Optics 2014*, page FTu2F.3. Optical Society of America, October 2014.

Manuel J. Marques, Adrian Bradu, and Adrian Gh. Podoleanu. Towards simultaneous Talbot bands based optical coherence tomography and scanning laser ophthalmoscopy imaging. *Biomed. Opt. Express*, 5(5):1428–1444, April 2014.

Mohammadreza RN Avanaki, **Manuel J. Marques**, Adrian Bradu, Ali Hojjatoleslami, and Adrian G Podoleanu. A new algorithm for speckle reduction of optical coherence tomography images. In *SPIE BiOS*, pages 893437–893437. International Society for Optics and Photonics, 2014.

Manuel J. Marques, Adrian Bradu, and Adrian Gh. Podoleanu. Tuning a fast linear camera used within a Talbot bands spectrometer-based optical coherence tomography set-up. In Manuel Filipe P. C. Martins Costa, editor, *8th Iberoamerican Optics Meeting and 11th Latin American Meeting on Optics, Lasers, and Applications*, volume 8785, pages 8785E1–8785E1–7, July 2013.

Adrian Bradu, **Manuel J. Marques**, Petr Bouchal, and Adrian Gh. Podoleanu. Combining Gabor and Talbot bands techniques to enhance the sensitivity with depth in Fourier domain optical coherence tomography. In James G. Fujimoto; Joseph A. Izatt; Valery V. Tuchin, editor, *Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XVII*, volume 8571, pages 857136–857136–6, February 2013.

(underlined entries mean presenting authors, in the case of conference proceedings)

Attended Conferences and Meetings

March 19th–20th, 2015	”IMAGE 2015 - Workshop on Glaucoma and Imaging” (Canterbury, United Kingdom).
November 4th, 2014	”Imaging the Optical Frontier” joint Physical Sciences/Engineering/Computing colloquium (Canterbury, United Kingdom). (*part of the organising committee*)
October 19th–23rd, 2014	Frontiers in Optics/Laser Science 2014, Optical Society of America’s 98th Annual Meeting (Tucson, AZ, United States of America). (*presented oral communication, “Optical Coherence Tomography and Scanning Laser Ophthalmoscopy: approaches to dual-channel retinal tissue imaging”*)
September 25th, 2014	School of Physical Sciences’ Research Symposium (Canterbury, United Kingdom). (*presented oral communication, “Spectral-domain Optical Coherence Tomography with Talbot bands - further developments”*)
June 23rd, 2014	University of Kent’s 4th Post-Graduate Research Festival (Canterbury, United Kingdom). (*presented oral communication, “Imaging the eye with a dual-purpose instrument: optical coherence tomography (OCT) and scanning laser ophthalmoscopy (SLO)”*)
June 21st, 2014	LUSO 2014 - 8th Annual Meeting of Portuguese Researchers and Students in the UK (Bath, United Kingdom)
June 9th–12th, 2014	SEPnet Graduate Network Summer School: “Modelling Today - Leading Tomorrow” (National Physical Laboratory, Teddington, United Kingdom). (*presented poster*)
June 5th, 2014	ISAT Institute of Physics (IoP) seminar: Test and Measurement using National Instruments Technology (Kingston upon Thames, United Kingdom). (*presented oral communication, “NI-based solutions used in OCT: challenges”)*
January 17th, 2014	School of Engineering and Digital Arts’ Research Conference 2014 (Canterbury, United Kingdom). (*presented poster*)
November 20th, 2013	NI Days 2013, LabVIEW developers meeting (London, United Kingdom).
July 22nd–26th, 2013	RIAO/OPTILAS 2013 - VII Iberoamerican Conference on Optics, XI Latinamerican meeting on Optics, Lasers and Applications (Porto, Portugal). (*presented poster*).
June 22nd, 2013	LUSO 2013 - 7th Annual Meeting of Portuguese Researchers and Students in the UK (Cambridge, United Kingdom)
June 18th, 2013	University of Kent’s 3rd Post-Graduate Research Festival (Canterbury, United Kingdom). (*presented poster*)
September 6th–8th, 2012	Física 2012 - conferência nacional de Física (Aveiro, Portugal). (*presented poster)*
June 28th, 2012	Kent and Medway Health Partnerships Event (Gillingham, United Kingdom). (*presented poster*)
October 29th–31st, 2011	XII ENEF - 12th National Meeting of Physics Students (Porto, Portugal).
May 2nd–4th, 2011	International Symposium on behalf of the 25th anniversary of *Europhysics Letters* - Frontiers of Physics (Munich, Germany).
February 17th–18th, 2011	IJUP 2011 - 4th Meeting of Young Researchers of the University of Porto (Porto, Portugal). (*presented oral communication*)
September 8th–10th, 2010	EWOFS 2010 - 4th European Workshop on Optical Fibre Sensors (Porto, Portugal).
March 18th–19th, 2010	III COEFFIS - *Congreso de Estudiantes de la Facultad de Física,* La Laguna University (La Laguna, Canary Islands, Spain).
February 17th–19th, 2010	IJUP 2010 - 3rd Meeting of Young Researchers of the University of Porto (Porto, Portugal).
February 27th to March 1st, 2009	XI ENEF - 11th National Meeting of Physics Students (Porto, Portugal).

Personal skills and competences

Languages

Portuguese	**Highly fluent (native)**	
English	**Highly fluent**	
French	**Basic understanding and expression**	Elementary school level.
Spanish	**Basic understanding and expression**	

Social skills and competences

- Experience in team work from previous work and volunteering positions, and also from recreational/sport-related activities, in particular from rowing and athletics.

Computer skills

- **Operating Systems:** GNU/Linux (major distributions only, Fedora and Ubuntu); Mac OS (pre- and post-OS X); Microsoft Windows/DOS.
- **Scientific and Engineering:** Wolfram Mathematica; AutoCAD; OriginLab; *R* statistics package; `scipy` and `mathplotlib`.
- **Web Design:** `XHTML`, `CSS`. Experience in setting up on-line content management systems (CMS) such as Plone, Drupal, and WordPress.
- **Programming:** Python and LabVIEW (used regularly); `C/C++`, `PHP` (basic knowledge).
- **Typography and Design:** LaTeX2e; Inkscape; The GIMP; Scribus; Adobe Photoshop.

Scientific society memberships

Since June 2012	SPIE (the international society for optics and photonics, formerly the *Society of Photo-Optical Instrumentation Engineers*) - student member. Also a member of the University of Porto SPIE Student Chapter.
Since November 2012	OSA (Optical Society of America) - student member. Also a member of the University of Kent OSA Student Chapter.

Artistic skills

Amateur photographer (`http://www.flickr.com/photos/mr_bsod`). Experience in visual arts, especially those involving computer drawing and image processing.

Driving licence

Since October 2008	B category (Full EU)

Other accomplishments and awards

September 2014	Awarded Incubic/Milton Chang Travel Grant for attending Frontiers in Optics 2014/Laser Science (Tucson, Arizona, United States of America)
June 2014	Best poster award - SEPnet Graduate Network Summer School (National Physical Laboratory, Teddington, United Kingdom)
June 2013	Best poster award (Faculty of Sciences) - 3rd Annual University of Kent Post-graduate Research Festival (Canterbury, United Kingdom)
March 2006 to September 2007	Participant on the 2006-2007 edition of the Portuguese Physics Olympiads, where qualified for the Ibero-American Physics Olympiads.